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United States Interdepartmental
Social Hygiene Board.

Scientific Researches

Outline of work in progress
January 1, 1920

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UNITED STATES INTERDEPARTMENTAL
SOCIAL HYGIENE BOARD

SCIENTIFIC RESEARCHES

Outline of Work in Progress
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ACTIVITIES OF THE BOARD.

1. AID TO STATES—PROTECTIVE MEDICAL MEASURES.

Aids financially over 400 public venereal disease clinics throughout the United States. Professional supervision furnished by United States Public Health Service, paid largely by this Board from its fund, "Payment to States, \$1,000,000, June 30, 1920."

Assists States financially in venereal disease control, through bureaus in State health organizations.

2. PROTECTIVE SOCIAL MEASURES.

Furnishes aid to States in venereal disease control in cooperative planning, conducting, and financing the elimination of the venereal disease carrier. This aspect covers social causes, corrective measures, rehabilitation, and preventive measures.

Furnished personnel for the work necessary in protecting the military and naval forces of the United States from venereal diseases.

Furnishes financial aid to detention homes, reform schools, and similarly qualified institutions caring for venereal disease carriers who, otherwise, would be a menace to the health of the military and naval forces of the United States.

These activities are supported from the Board's fund, "Aid to States, \$1,000,000, June 30, 1920."

3. RESEARCH WORK.

(a) *Scientific*.—Promotion of and restricted assistance in financing scientific researches for improved medical measures for control of venereal diseases. Supported from the Board's fund, "Scientific Research, \$100,000, June 30, 1920."

(b) *Educational*.—Promotion of and restricted assistance in financing researches in universities, colleges, and other qualified institutions or organizations for improved educational measures and for related sociological and psychological researches. Supported from the Board's fund, "Educational Research, \$300,000."

Headquarters and Administrative Offices, 1800 Virginia Avenue, NW,
Washington, D. C.

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FIRST ANNOUNCEMENT

OF SCIENTIFIC RESEARCHES, CARRIED ON WITH THE ASSISTANCE OF THE UNITED STATES INTERDEPARTMENTAL SOCIAL HYGIENE BOARD "FOR THE PURPOSE OF DISCOVERING * * * MORE EFFECTIVE MEDICAL MEASURES IN THE TREATMENT AND PREVENTION OF VENEREAL DISEASES."¹

(Arranged in accordance with the sequence in which the appropriations were made by the Board up to Jan. 1, 1920.)

LELAND STANFORD JUNIOR UNIVERSITY MEDICAL SCHOOL:

Dr. R. L. Rigdon and Dr. A. S. Spalding in the Gynecological and Genito-Urinary Laboratory of Leland Stanford University Medical School are searching for a more effective treatment in acute and chronic gonorrhea. These investigators are devising ways and means of keeping very close supervision over their patients, investigating systematically new methods of treatment and checking the efficiency of this treatment by carefully controlled bacteriological examinations.

In the Neurological Laboratory of this same institution, Dr. H. G. Mehrrens and Dr. Thomas Addis are conducting a research on the permeability of the meninges to antisyphilitic drugs and are attempting to find methods of treatment that will increase this permeability. Their plans contemplate an induced permeability through the intraspinal injection of auto-serum.

In the clinic for skin diseases and syphilis of the Stanford University Medical School, Dr. H. E. Alderson is searching for more effective methods of treating syphilis. He is checking up his method with frequent repetitions of the Wassermann test and is investigating the "Provocative Wassermann."

UNIVERSITY OF MICHIGAN COLLEGE OF MEDICINE:

At the University of Michigan Dr. A. S. Warthin is engaged in a three-year program to improve the method and shorten the time required for the staining of spirochaetes in tissues. The success of Dr. Warthin's research will provide an accurate diagnosis of latent syphilis now seldom recognized. These researches are being carried out in the Pathological Laboratory of the University of Michigan. With Dr. Warthin is associated a staff of nine investigators and assistants engaged in this research.

In the January number of the American Journal of Syphilis, there will be published the first results of this research, describing a

¹ Under authority of Congress, Public No. 193, Sixty-fifth Congress, H. R. 12281, Chapter XV, section 6.

new method which makes possible an examination for treponema on cover-glasses and has greatly shortened the period of time required for the demonstration of treponema in tissues.

JOHNS HOPKINS UNIVERSITY MEDICAL SCHOOL:

Four groups of researches are being carried out in the clinical, pathological, bacteriological, and animal experimental laboratories of the Brady Urological Institute, Johns Hopkins University, under the direction of Dr. Hugh Young.

With Dr. Young, Dr. E. C. White and R. W. Hale, Jr., are working on the development of new synthetic drugs for the treatment of gonorrhea and infections of the genito-urinary tract. The drugs in present use in the treatment of acute gonorrhea are, in the main, ineffective. There is great need of a more successful antiseptic. Clinical application of certain new drugs have given better results and a promising new field for experimentation has been opened. This investigation is for the purpose of synthesizing drugs which will possess qualities superior to those of the drugs in present use and test their comparative antiseptic values experimentally and clinically.

Under Dr. D. M. Davis, working with Dr. Young, a research is being conducted for the manufacture and investigation of a series of new organic compounds for the treatment of syphilis. Salvarsan is now admitted to have failed in producing radical cures of syphilis, and mercury is again being used to complete "cures." But great difficulties still exist in using mercury owing to the frequency of toxic results, especially on the kidneys. Some of the recent work in the Brady Urological Laboratory points to the possibility of employing new mercurial compounds which will be tolerated in larger quantities than the old, paying especial attention to use in the sub-arachnoid space.

Dr. E. O. Swartz, in this same laboratory, is concerned with the preparation and investigation of a series of penetrating organic dyes for the treatment of chancroids. The treatment of chancroids depends largely upon an attack against the infection in its localized area in the tissues in which the specific bacilli of Ducrey are deeply buried. The drugs used at present are ineffective chiefly because of their lack of penetrability. By the use of organic dyes, to which antiseptic groups have been clinically bound, Dr. Young and Dr. Swartz are securing nonirritating drugs of low toxicity and deep penetration and of much greater sterilizing value than others now in use, thus effecting much more rapid cures.

Dr. Swartz has also improved the media and methods so as to be able to produce remarkably luxuriant cultures of gonococcus. This was a prerequisite for the study of the germicidal action of

drugs on the gonococcus in vitro. The germicidal properties of the drugs commonly used for venereal prophylaxis, as well as the action of the new compounds produced in this laboratory, are being studied on the gonococcus. Efforts are being made to secure a simple, effective gonococcide to be used in the early treatment of venereal infections.

The study of antiseptics for venereal diseases is made much more difficult by the fact that experimental infections can not, up to the present, be made. An exhaustive series of experiments, in an effort to develop a method of experimental animal infection with the gonococcus, is being carried out. This is considered to be an absolutely fundamental point in the laboratory study of gonorrhea, which, if successful, will be of the utmost importance to all the other work on gonorrhea.

Finally, in this same laboratory, efforts are being made to develop a simpler technique and more effective and less expensive drugs for the prevention of venereal diseases. The venereal prophylaxis in present use in the Army depends upon drugs and apparatus available only in especially equipped stations and tedious in administration. The purpose of this investigation is to procure a preventive for the Army more easily applicable and less expensive. The relatively little progress in the perfection of venereal prophylaxis made since the discoveries of Metschnikoff and Roux in 1905 especially justifies an investigation concerned with the production of simpler and more effective methods.

UNIVERSITY OF WISCONSIN:

An appropriation has been made to the University of Wisconsin enabling Dr. A. S. Loevenhart, director of the department of pharmacology and toxicology, to search for various compounds of arsenic and mercury which might show a predilection for the central nervous system, either in consequence of their physical or chemical properties. The substances soluble in lipoids might reasonably be expected to find their way into the central nervous system. The object of this investigation is to discover drugs more useful than any now known in the treatment of syphilis involving the central nervous system. The following departments in Wisconsin are collaborating with Dr. Loevenhart's department in this work: Bacteriology and pathology, Dr. Paul F. Clark, Dr. W. D. Stovall; physiological chemistry, Dr. H. C. Bradley. The clinical part of the investigation is under the direction of J. F. Lorenz, associate professor of psychiatry at the university, and consulting physician to the State board of control.

Dr. W. Lee Lewis, professor of chemistry, Northwestern University, and Dr. Roger Adams, professor of organic chemistry, University of Illinois, are collaborating with the Wisconsin group. Dr.

Lewis and Dr. Adams are engaged in researches on the preparation of new synthetic organic arsenic compounds, particularly those which may be soluble in lipoids and which therefore should be readily absorbed by the central nervous system.

CORNELL UNIVERSITY MEDICAL COLLEGE:

Dr. John C. Torrey is making a serological study of the gonococcus group in the laboratory of hygiene of the Cornell Medical College. This research is an investigation into the relationship of many strains of gonococcus from various sources to determine whether the group is homogeneous or heterogeneous. If the former is the case, the research may establish a few groups of fixed types which will embrace the great majority of strains encountered in pathological conditions, as had been done for the pneumococcus and the meningococcus groups. Such a grouping would go a long way to establish the complement fixation test for gonococcic infection on a more rational and satisfactory basis.

This investigation may also throw light upon the question of the inter-relationship of gonococcic ophthalmia, urethritis, and vaginitis.

If this research succeeds in establishing a standard antigen, we may not only expect that the complement fixation mode of diagnosis will give more trustworthy results but we shall have the basis for the preparation of a standard stock vaccine.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE:

At the University of Nebraska College of Medicine, Dr. Edwin G. Davis and his associates are attempting to develop a new internal urinary antiseptic and are investigating the value of certain anilin dyes in the treatment of gonorrhea. These researches at Nebraska are very like those that are being carried out in the Brady Urological Laboratory at the Johns Hopkins Medical School. In the previous studies carried out by Dr. Davis it has been possible to establish a definite relationship between the chemical structure and renal excretion and to predict with reasonable accuracy which drugs would be likely to be excreted. It has further been possible to so modify these compounds chemically as to produce an antiseptic compound excreted by the kidney. It was thus possible to produce an internal and urinary antiseptic which was experimentally successful. Dr. Davis is carrying his investigation out along these same lines and plans to investigate these compounds with a view to determining their power of penetration through the urethral mucosa and to determine other antiseptic properties both in vitro and in the urinary tract.

ST. LOUIS UNIVERSITY COLLEGE OF MEDICINE:

Dr. R. A. Kinsella is directing an investigation covering the bacteriology of the gonococcus—its growth peculiarities, its classifica-

tion, its immunizing properties, and its mode of infecting experimental animals. The program of this research includes a study of the agents, biological or chemical, which neutralize the activities of the gonococcus or relieve its established effects. It is proposed to devote two or three years to the whole program as outlined. This research under Dr. Kinsella is being carried out in the laboratory of experimental medicine at the St. Louis University College of Medicine.

JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA:

A search for a more rapid and specific method of demonstrating the treponema pallidum and for a simplification of the clinical diagnosis and treatment of syphilis was carried out last summer by Dr. Randall C. Rosenberger and his assistants in the laboratory of hygiene and bacteriology in the McFadden Laboratory of Research at the Jefferson Medical College. Results of this investigation should appear shortly.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA:

Dr. Bertha M. Meine and Dr. Rose Hirshler, of the Woman's Medical College of Pennsylvania, are making a serological study of syphilis in pregnant women and new-born children, with especial reference to the efficacy of the accepted methods of syphilitic treatment. They are studying the prevalence of syphilis among mothers and the new born; investigating the subject of nonspecific complement fixation during pregnancy; making a comparative study of serological and histological examinations of the placenta of syphilis, stating the comparative value of the two accepted methods of specific treatment before and after delivery; searching for additional data on the time of the first appearance of the syphilitic reagin in the blood of the new born; and seeking to determine if therapeutic benefit can be derived for the infant from the mother's milk.

YALE UNIVERSITY MEDICAL SCHOOL:

Dr. J. N. Flint and Dr. J. W. Churchman, in the laboratory of surgery at the Yale University School of Medicine, are engaged in a research on the effect of anilin dyes, particularly gentian violet, on the gonococcus. The investigators are making a study of the effects of gentian violet on the growth of gonococcus, continuing the work already done by Churchman for other organisms. Their program includes also a study of the effect of gentian violet on gonococcus in tissues, the research being similar to other work done by Churchman on other organisms in joints, the aim being to apply therapeutic results already reached in joint infections and the treatment of gonorrheal infections.

In the Brady Laboratory of Pathology and Bacteriology of the Yale School of Medicine in affiliation with the New Haven Hospital,

Dr. M. C. Winternitz and Dr. G. H. Smith with a group of assistants are carrying out two researches. The first of their investigations is an intensive study of methods for the isolation and identification of the gonococcus with a view to the determination of the homogeneity and heterogeneity of strains and their etiological relationships. This investigation will involve (1) the development of a more readily applicable and certain method of cultivation and identification of the gonococcus; (2) a study of cultural characteristics of the strains; (3) a study of serological reactions of the strains with (4) particular reference to the serological properties of strains present in cases where vaccine therapy is inefficient.

The second research being carried out by Dr. Winternitz and Dr. Smith is concerned with the demonstration of the syphilitic nature of unusual lesions encountered at the post mortem table. With the elaboration of methods for the demonstration of the *treponema pallidum* in tissues, it will be possible to investigate (1) presumptive lesions of syphilis more thoroughly and (2) the occurrence of *treponema pallidum* without manifest anatomical changes in tissues, and, finally, an attempt to explain possibly according to the morphology of the etiologic agent, the foreign body type of reaction encountered in tertiary syphilis.

HARVARD UNIVERSITY MEDICAL SCHOOL:

In the pharmacological laboratory at Harvard University, investigation is being made by Dr. Reid Hunt relative to the toxicity of arsphenamine, neoarsphenamine and analogous products.

ALBANY MEDICAL COLLEGE OF UNION UNIVERSITY:

Two researches are being carried on in the Albany Medical College of Union University. One of these investigations under Dr. T. Ordway and his associates in the departments of physiology and chemistry, and the laboratory of physiological chemistry, is concerned with studies on the nature of the Wassermann reaction. Dr. Ordway writes that: "From the scientific standpoint there has been a marked change in our opinions concerning the Wassermann reaction. It was at first supposed that antibodies were present in the blood which united with the specific antigen—the casual agent of syphilis in large numbers in the liver of the congenital syphilitic. It was later found that organs from nonsyphilitic persons and from animals, and even certain lipid substances possessed antigenic properties; indeed, that such substances were more certain in their action than antigens made from pure cultures of the specific infectious agent, the *treponema pallida*, when obtained from cultures in vitro. From these facts, we are not clear whether the Wassermann reaction is a specific, so-called 'immunity reaction' or whether it is a delicate biological indicator which represents measurable chemical changes in the body fluids as a result of syphilitic infection."

The second of the researches at the Albany Medical College is under the direction of Dr. George S. Graham, who, with his associates in the department of pathology and anatomical laboratory and the X-ray research laboratory of the General Electric Co. of Schenectady, are attempting to produce generalized infection in lower animals with the *treponema pallidum* or the *gonococcus*. This research is an attempt to produce experimental disease in animals. If the attempt is successful, these investigators propose to take up a pathological study of the lesions produced.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL:

Three researches are being carried out in the University of Minnesota. One of these investigations under Dr. W. P. Larson and Dr. J. F. McClendon is being undertaken in the laboratory of bacteriology and immunology and is concerned with a study of the permeability of bacterial membranes, particularly of the organisms of venereal disease.

The second investigation in the laboratory of experimental medicine under Drs. L. G. Rowntree, Charles E. Nixon, and G. Egerer is concerned with the chemical and physical properties of the cerebrospinal fluid in the luetic and nonluetie.

The third research, under Dr. A. D. Hirschfelder and Dr. H. G. Irvine in the laboratory of pharmacology and in the clinics of dermatology and syphilis, is concerned with an investigation of phenol alcohol derivatives in relation to their antiseptics and chemotherapy of the *gonococcus* and *spirochaete*. The phenol alcohol group has been very little studied. There is reason to believe that it may combine a definite antiseptic power with low toxicity and that higher derivatives may be synthesized in which these characteristics will be greatly enhanced.

WASHINGTON UNIVERSITY SCHOOL OF MEDICINE:

Two researches are being carried out at the Washington University School of Medicine; one under Dr. M. F. Engman, department of medicine, division of dermatology and biological laboratories; the other under Dr. P. C. Jeans, department of pediatrics.

Dr. Engman, with his associates, is working to determine the status, if possible, of the latent syphilitic as a means of conjugal infection. He is attempting to obtain the exact clinical status of each individual patient with latent syphilis and to make a biological investigation of each of those patients to determine if live *treponema pallida* exist in the blood stream; in the lymphatic glands of women with latent syphilis; and in the semen of men with latent syphilis.

Dr. Jeans and his associates are making histologic examinations of a large number of placentae for evidence of syphilitic involvement,

comparing these findings wherever possible with the Wassermann reaction of the mother's serum and with a later clinical and serological examination of the infant. They hope to establish on a more accurate basis the value of placental examination in determining the presence of syphilis in the infant. They are collecting also testes from necropsy material of all married males 50 years of age or less. This material will be examined for spirochaetes in those instances in which family studies are more or less complete.

MASSACHUSETTS STATE PSYCHIATRIC INSTITUTE:

An appropriation has been made to the Massachusetts State Psychiatric Institute for two investigations that are being carried out under the direction of Dr. E. E. Southard.

The first of these researches is concerned with the changes effected in the central nervous system by the treatment of cases of neuro-syphilis. This investigation involves an elaborate and final study of present methods, of the tissues, especially the nervous system of subjects who have been treated for neuro-syphilis systematically and intensively.

The Massachusetts State Psychiatric Institute possesses in its own laboratory about one hundred brains and spinal cords of subjects of neuro-syphilis who have been intensively treated by various methods—intravenously by salvarsan, arsphenamine, mercury, and iodides; by spinal injections of various drugs; by intracranial and intraventricular injections, and by combinations of these methods. This clinic is perhaps the most elaborate of the neuro-syphilitic clinics to be found anywhere in the world at the present time and the amount of autopsied material therein is unique and its quality very special on account of uniform methods of observation of material, and especially on account of the availability of all the spinal cords as well as the brains and other tissues of the cases.

This material is provided with elaborate clinical histories and records which have been collected in a readily available way. The cases have been systematically and intensively treated.

In addition to the hundred nervous systems of these systematically treated cases, there are several hundred other nervous systems equally well preserved and equally provided with clinical records in untreated and partially treated cases, both of the asylum group and of the psychopathic hospital group. In addition to this autopsy material, there is a large amount of cerebrospinal fluid material derived from the systematic neuro-syphilis treatment investigation carried on under the Commission on Mental Diseases since 1914.

The second investigation under Dr. Southard's direction is a research on the family of the syphilitic (social and economic effects of syphilis in special relation to the family). The clinical material

available to the Massachusetts State Psychiatric Institute is unique, and permits the establishment of a model plan for reaching "syphilis of the innocent" from a hitherto socially concealed source. The established ward and out-patient services available to the Psychiatric Institute yield a large number of neuro-syphilitics (paretics, tabetics, and atypical forms) yearly. In this research Dr. Southard is dealing mainly with the handling of the syphilitic family for the prevention of further infection and for the treatment of those already infected to prevent further syphilis. The social service problems involved are of extreme difficulty, and the technique is somewhat intricate, requiring rather expert scientific social workers. The information resulting from this investigation will indicate the size of the problem, its cost to the community, and the best methods of handling the situation. The information so secured could be put into a form available to all social agencies and particularly to those working in child welfare agencies and hospitals.

JOHN McCORMICK INSTITUTE FOR INFECTIOUS DISEASES:

In the John McCormick Institute for Infectious Diseases, Dr. R. D. Herrold, under the direction of L. Hektoen, is making an investigation for the establishment of a better and more definite standard of cure in the gonorrheal infection of the male. These investigators are attempting to improve the methods now in use for the cultivation of the gonococcus; to improve the so-called provocative test; and to correlate the results of fixation and other serologic tests.

NORTHWESTERN UNIVERSITY:

Dr. W. Lee Lewis, professor of chemistry, is working on the preparation of new synthetic organic arsenic compounds, particularly those which may be soluble in lipoids and which, therefore, should be readily absorbed by the central nervous system. The products of this research will be tested therapeutically in the Wisconsin laboratories.

UNIVERSITY OF ILLINOIS:

Dr. Roger Adams, professor of organic chemistry, is working on the preparation of new synthetic organic arsenic compounds, particularly those which may be soluble in lipoids and which, therefore, should be readily absorbed by the central nervous system. The products of this research will be tested therapeutically in the Wisconsin laboratories.

T. A. STOREY,
Executive Secretary,

United States Interdepartmental Social Hygiene Board.

WASHINGTON, D. C., 1800 Virginia Avenue NW.

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